

Eye-tracking on HEMS monitors: What do users see for energy saving?



Kan Takeuchi
Hitotsubashi University

BECC (Dec.9, 2014)

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Eye tracking?



10:02:13

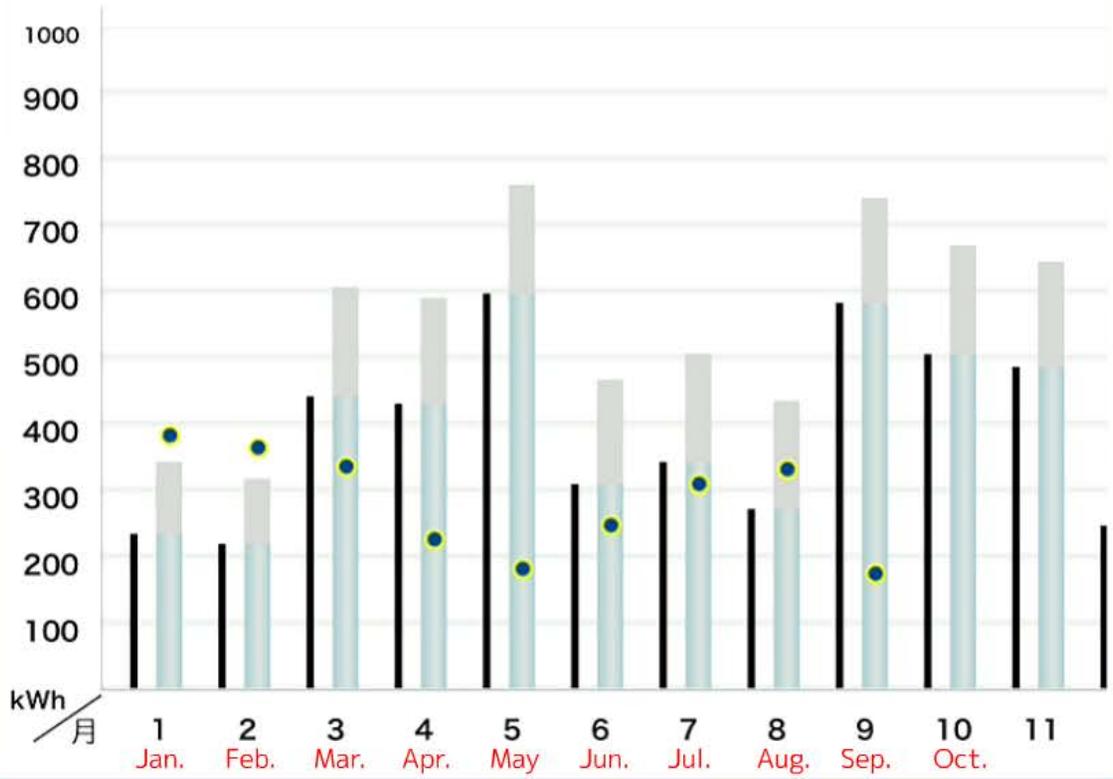
2014年09月22日

住戸 住棟 月 日 時

CO₂ MJ

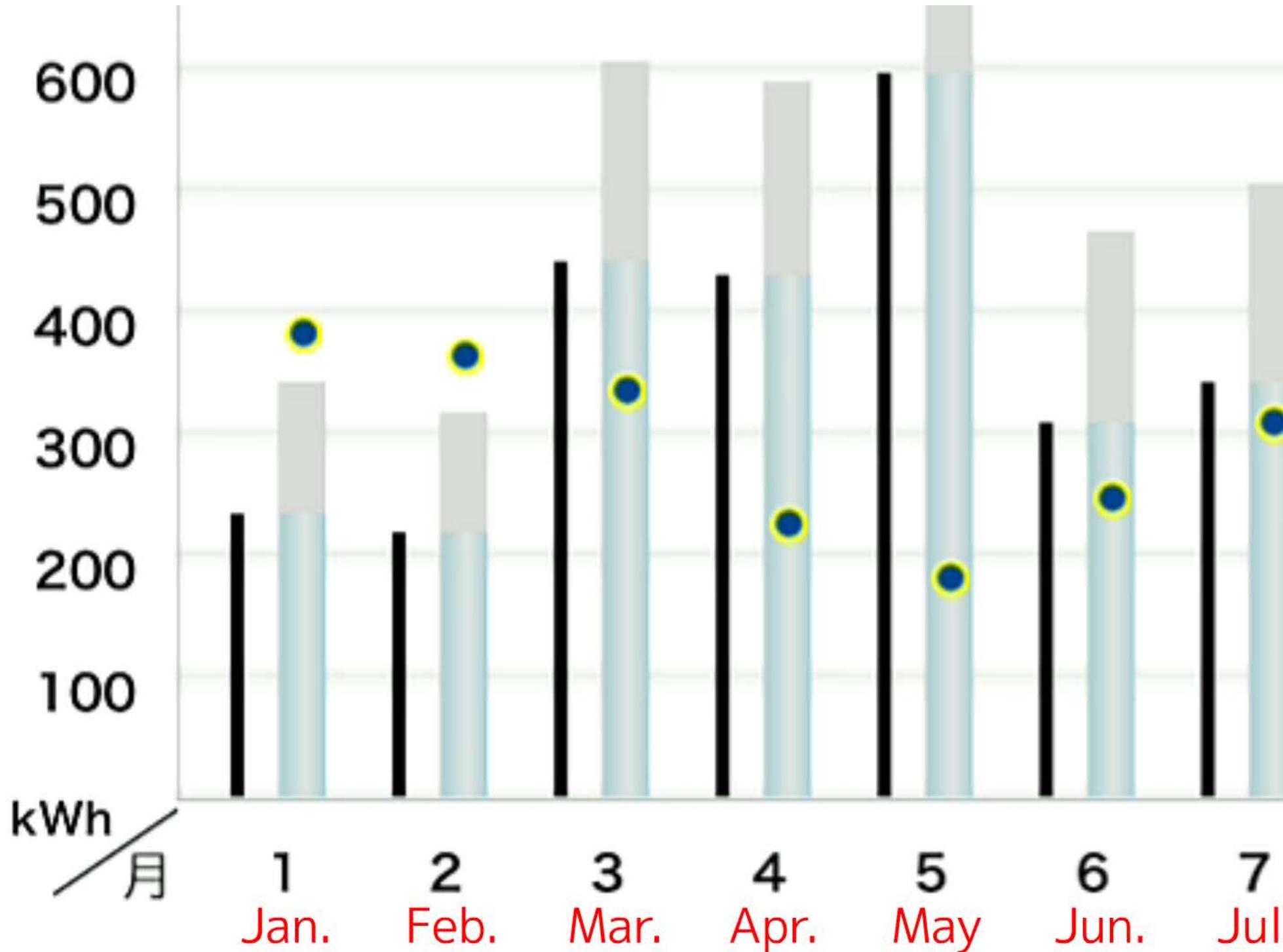
あなたの1年の電気使用量

■ 昨年 ■ 今年 ● 住棟平均値



電力会社 エネファーム 太陽光発電 余剰

2014年 の使用量は **4635.47 kWh**
102972 JPN Yen



ホーム

太陽光発電

消費量は

4635.47 kWh

102972 JPN Yen



機器操作



EV予約

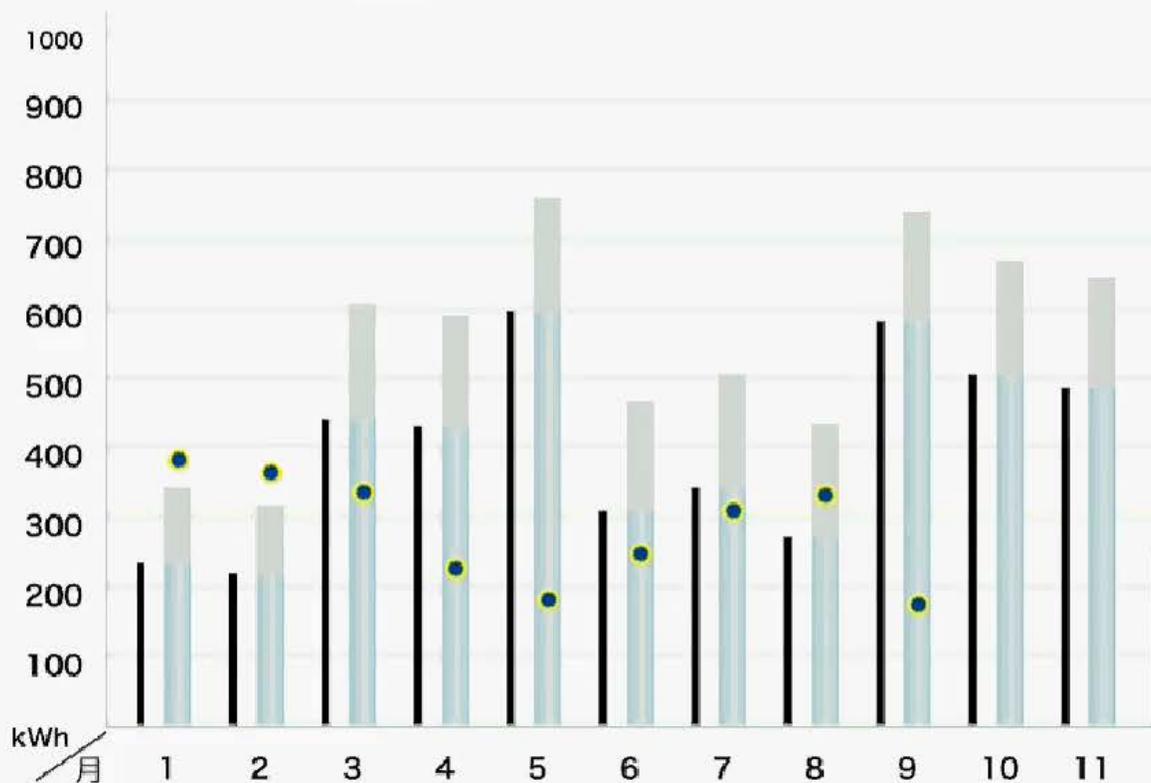
10:02:13

2014年09月22日



あなたの1年の電気使用量

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電力会社

エネファーム

太陽光発電

余剰

2014年

の使用量は

4635.47 kWh

102972円



TOP



エネルギー情報



履歴・比較



機器操作



EV予約



おトク情報



設定

Goal

- To improve HEMS **interface**
- To identify which piece of **information help** energy saving

Use hourly interval data
of energy consumption
Find "greener" users



Goal

- To improve HEMS **interface**
- To identify which piece of **information help** energy saving

- 
- Use eye-tracking
 - Analyze how the "green" users process information

- Use hourly interval data of energy consumption
- Find "greener" users

- Use eye-tracking
- Analyze how the "green" users process information

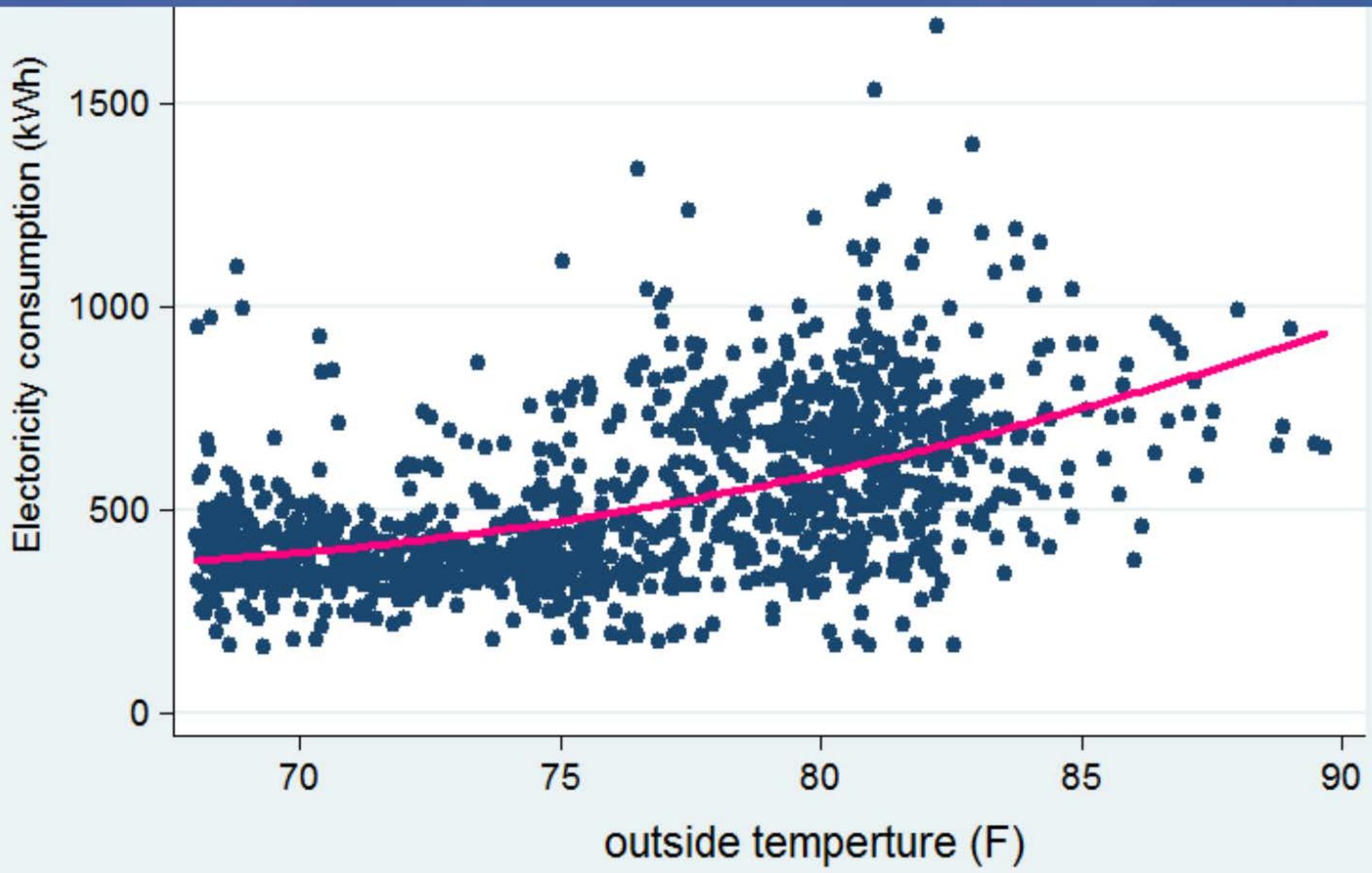
Use hourly interval data
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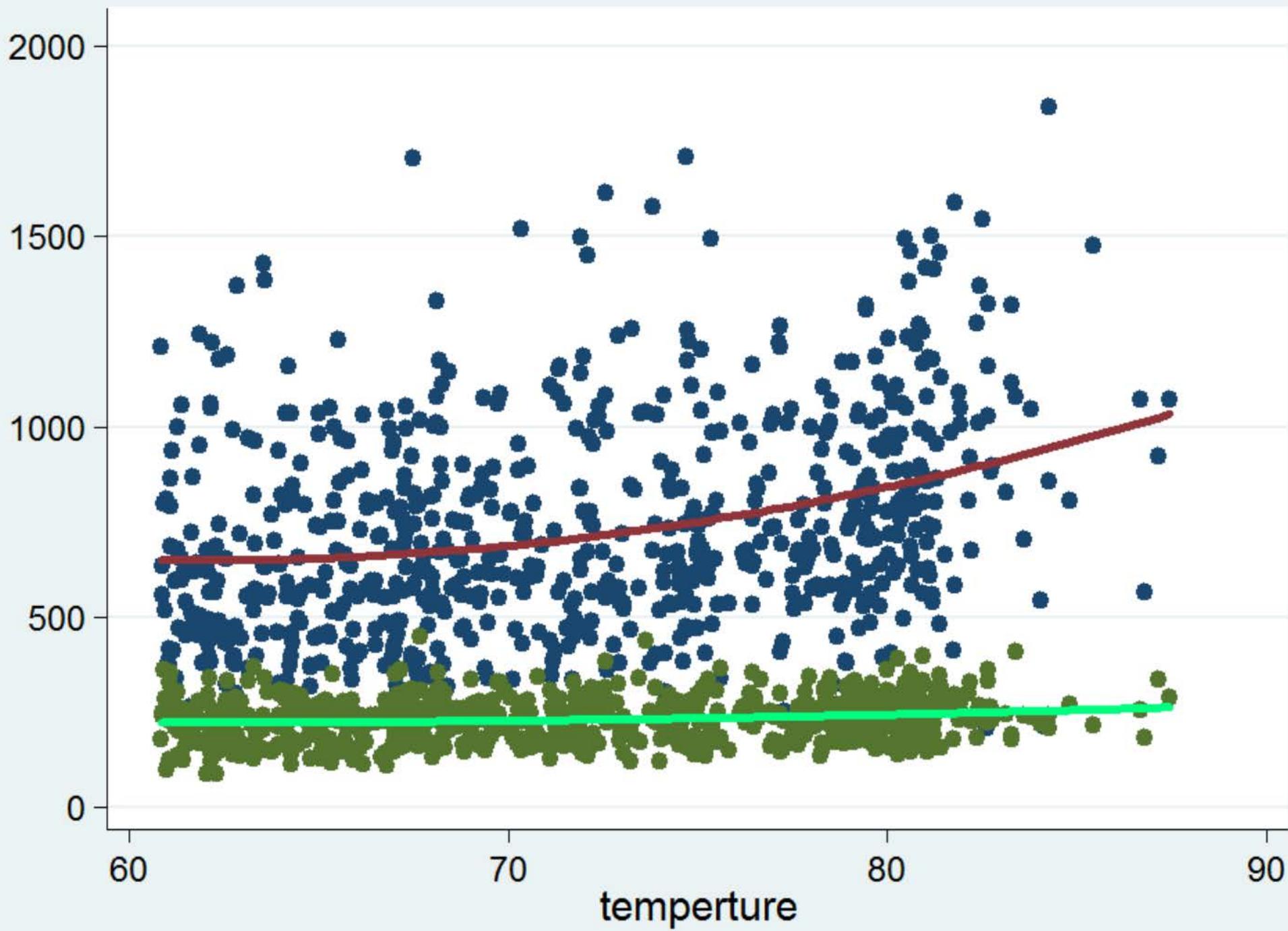


Goal

- To improve HEMS **interface**
- To identify which piece of **information help** energy saving

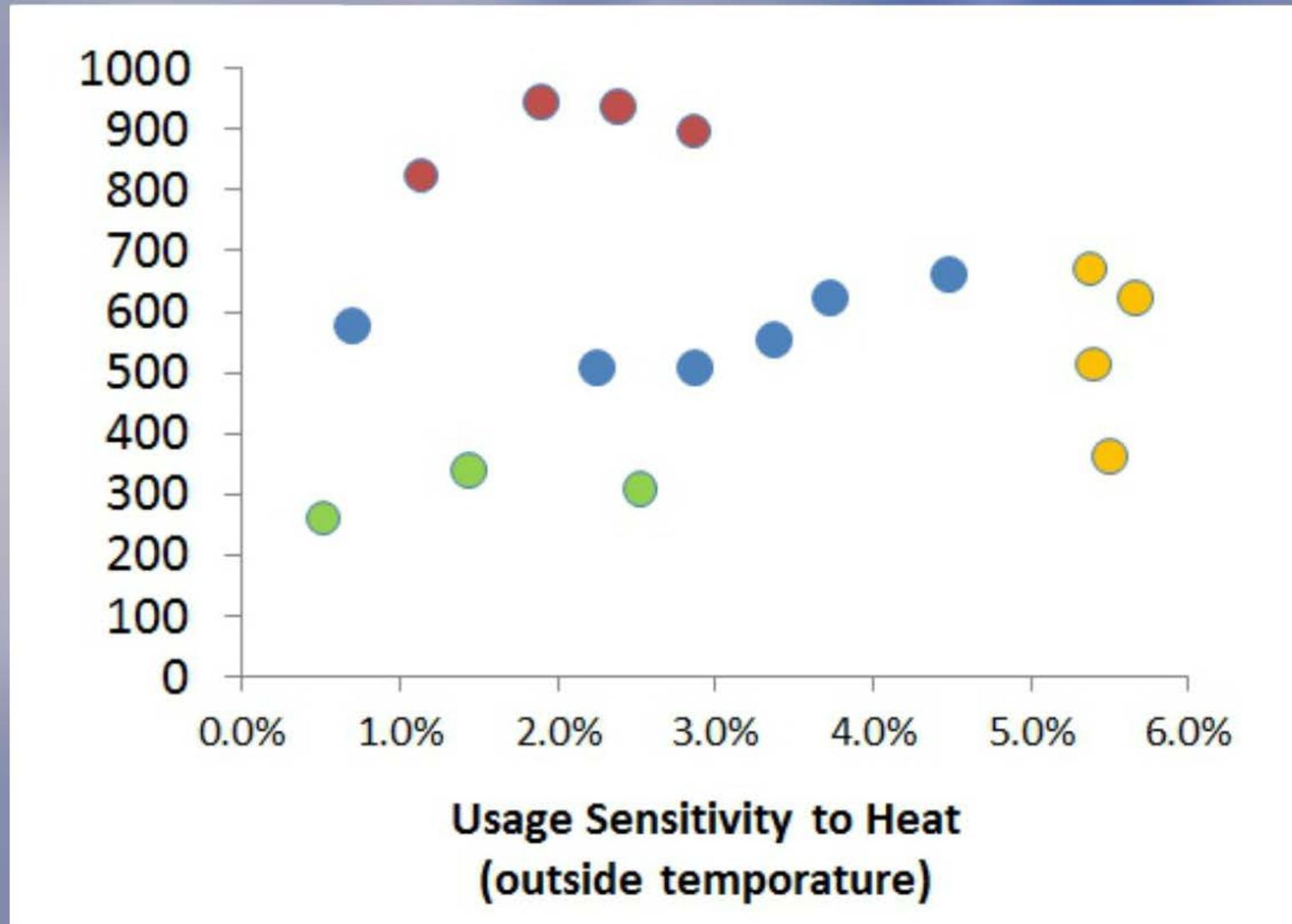
- 
- Use eye-tracking
 - Analyze how the "green" users process information





clustering in 2-dimension

Average consumption (kWh)



energy consumption



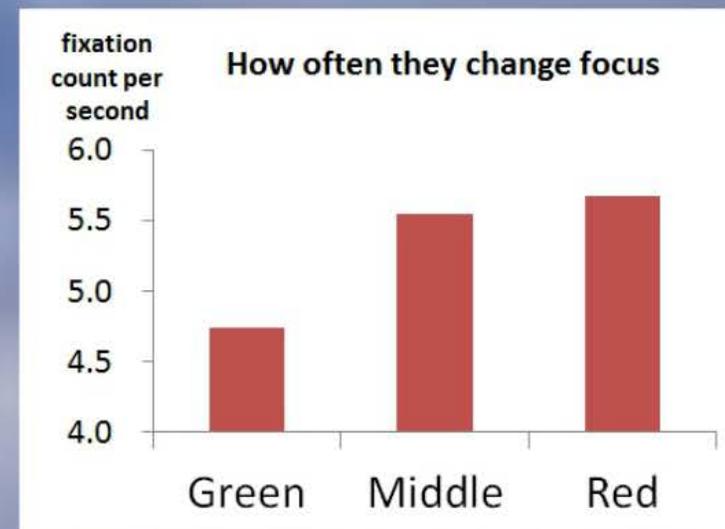
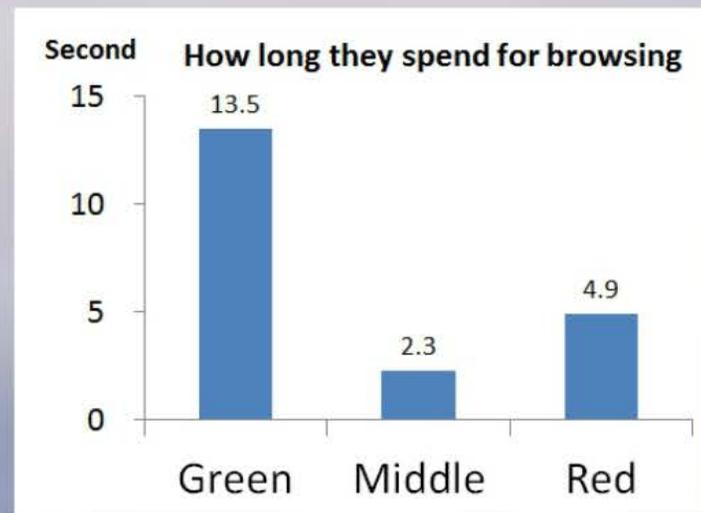
Red

Middle

Green

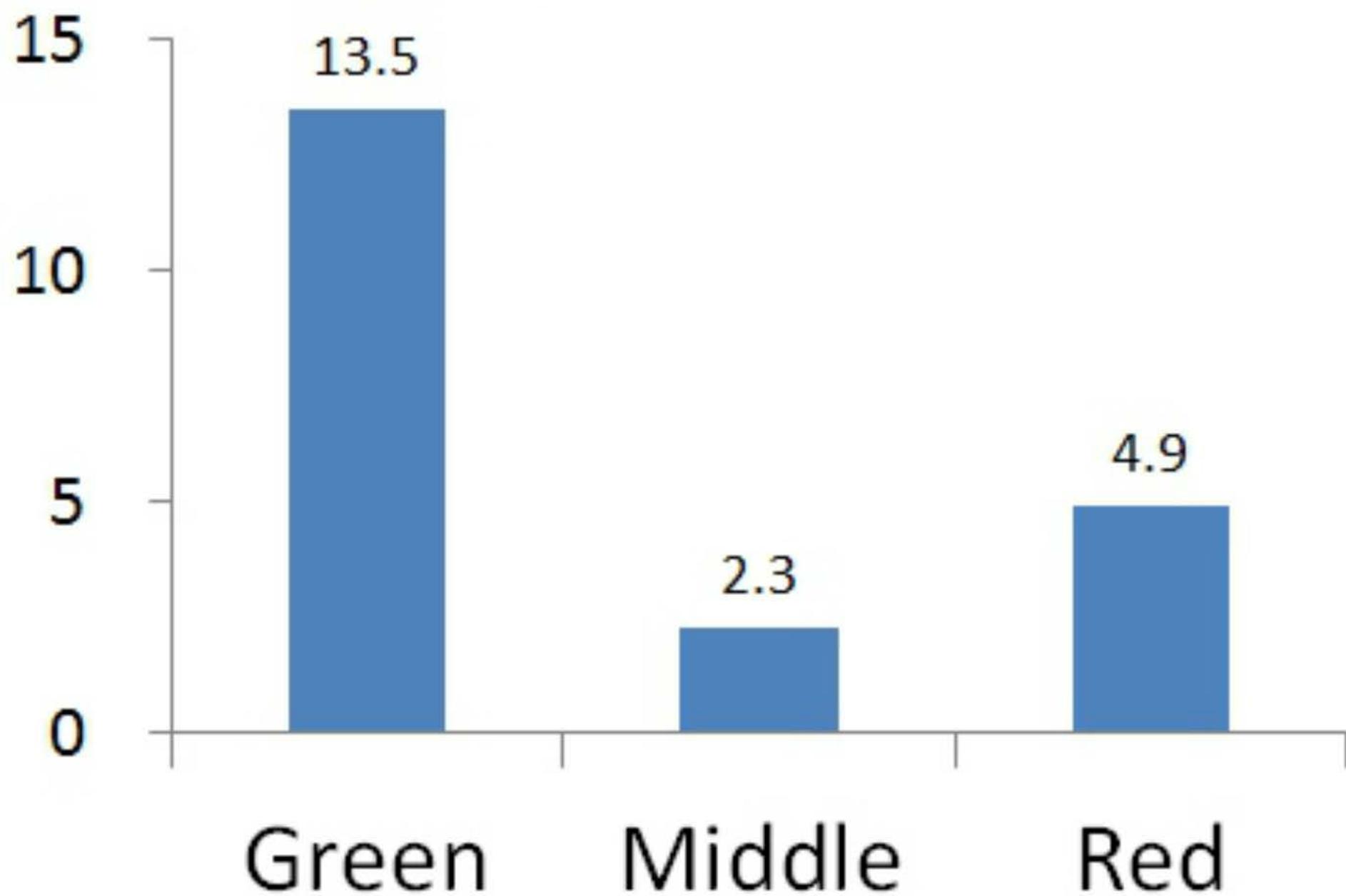
temperature

- Use eye-tracking
- Analyze how the "green" users process information



Second

How long they spend for browsing



How often they change focus

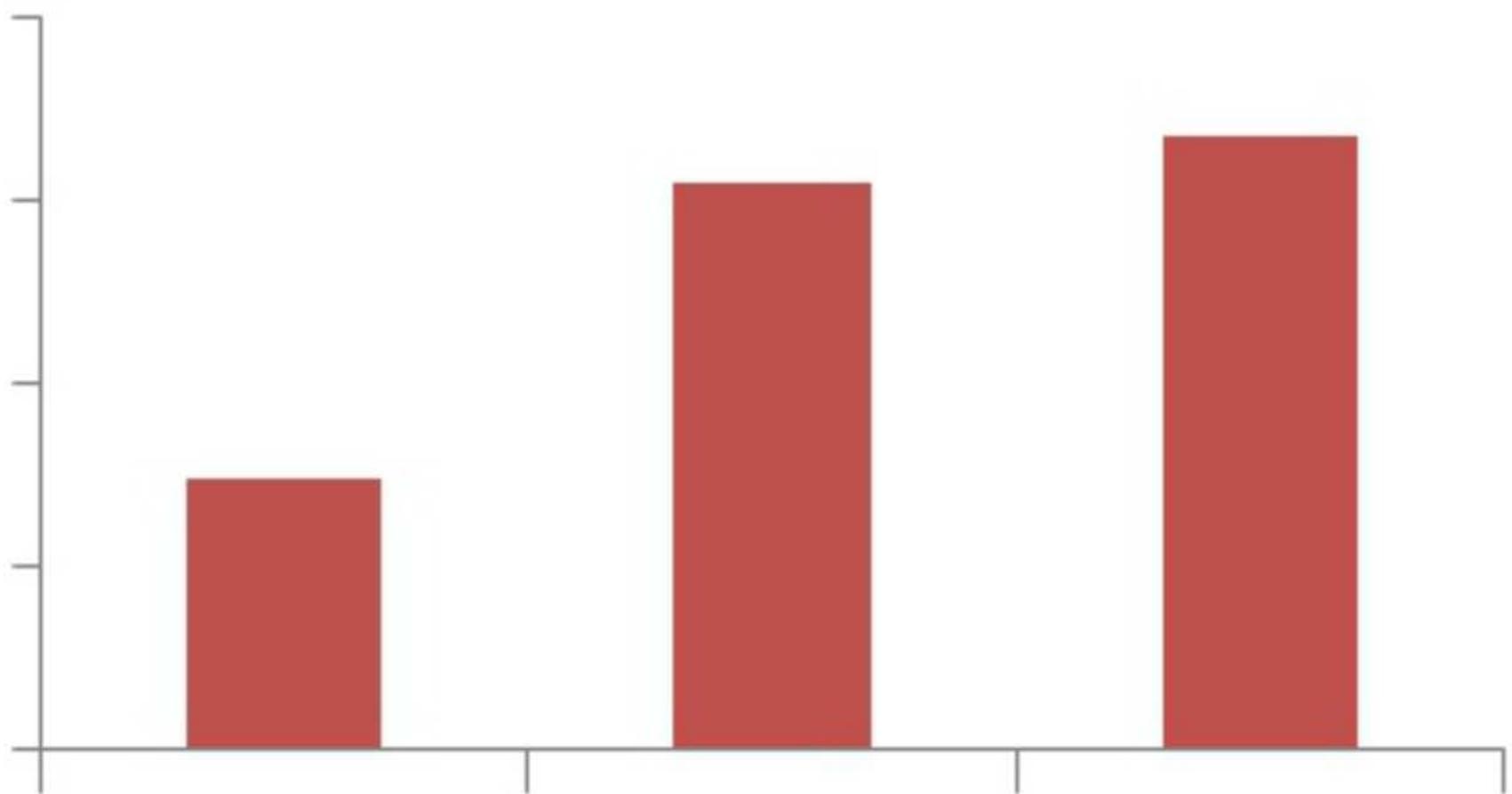
fixation
count per
second

6.0
5.5
5.0
4.5
4.0

Green

Middle

Red

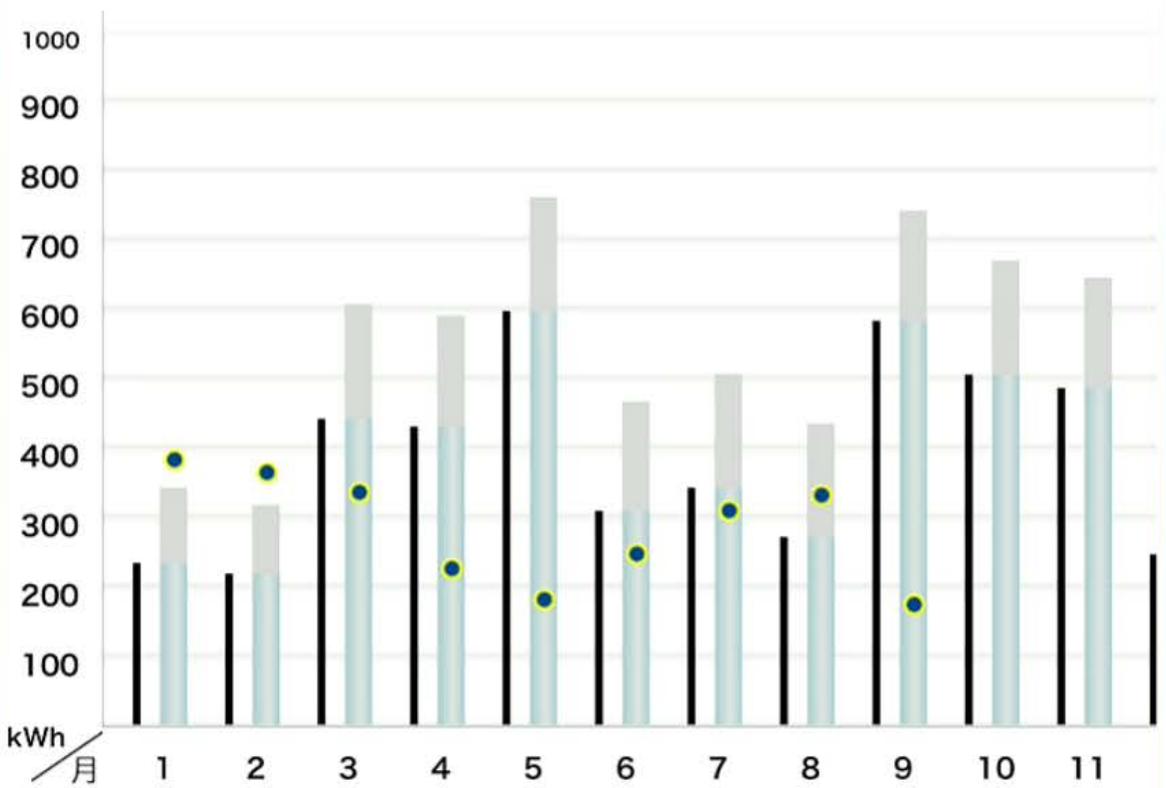


10:02:13 2014年09月22日

住戸 住棟 月 日 時

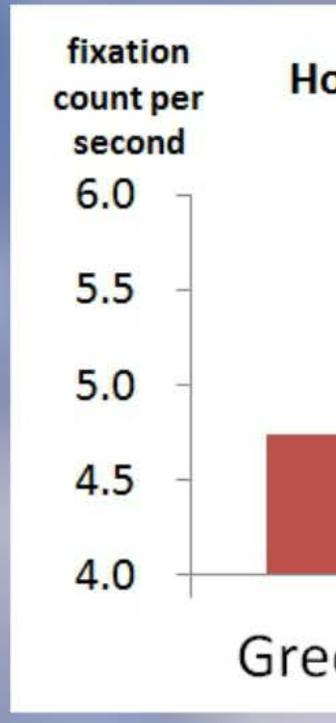
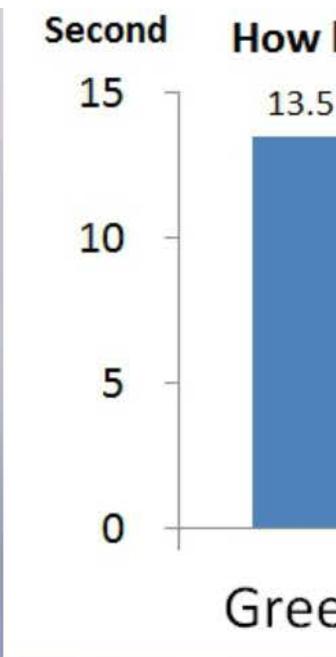
Lightbulb, Water drops, Water drop, Water drop, Yen symbol, CO₂, MJ

あなたの1年の電気使用量



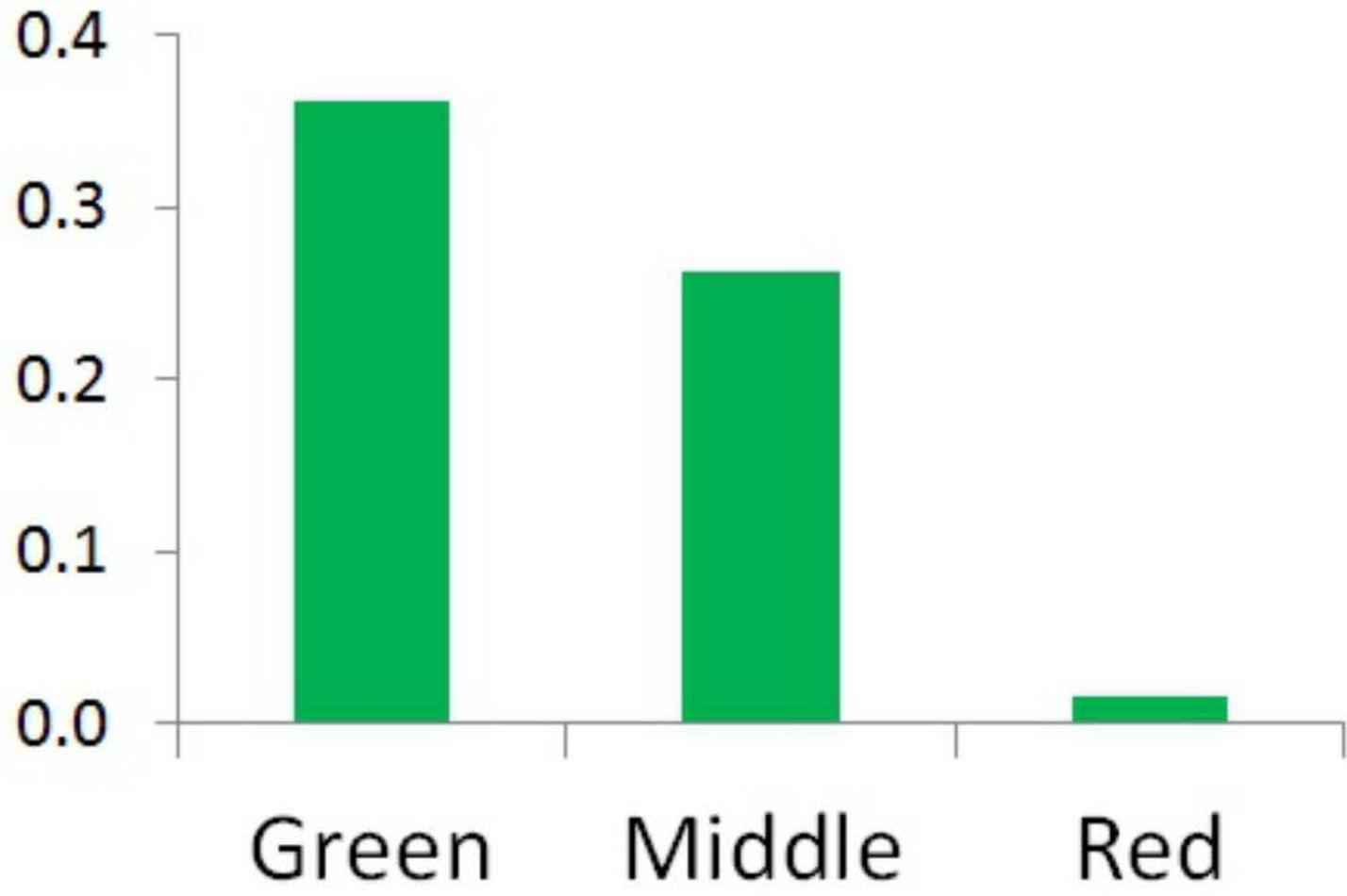
電力会社 エネファーム 太陽光発電 余剰

2014年の使用量は **4635.47 kWh**
102972 円



Second

How long they spend for browsing



Summary

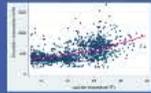
- Connect **interval data** with **eyetracking data**

- interval data:
clustering in 2 dimensions
 - 1) average consumption level
 - 2) sensitivity to the temperature

- eyetracking data:

Effect of information depends on how "green" the use is.
Needs for adaptive interface

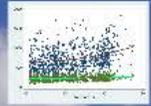
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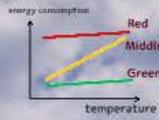
- Use hourly interval data of energy consumption
- Find "greener" users



- Use eye-tracking
- Analyze how the "green" users process information



clustering in 2-dimension



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Summary

- Energy saving with HEMS
- Effect of information on energy saving
- Effect of information on energy saving
- Effect of information on energy saving

